ICAO Activities

Federal Aviation Administration

IFPP work on the Manual for Continuous Descent Operations

Presented to: JPDO, EWG, Ops SC Workshop

NASA Ames Facility, Moffet Field, CA

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Overview

- **History leading to ICAO Tasking IFPP**

- **Highlights of the “Manual for Continuous Descent Operations”**

History

- **Nov 2006: Obstacle Clearance Panel (OCP) Singapore**
  - Noted that internationally, design of CDA's was diverging
  - Proposed publishing changes in PANS-OPS/ABC/ATM to standardize the intent of CDAs to ATC, pilots and proc designrs
- **Mar 2007: OCP Montreux, CH**
  - ID'd disciplines to be addressed & cross panel coord (OPSP, SASP, CAEP, ATM section, EuroCont CDA Focus Group)
  - Agreed an "Op Concept" should be developed
- **Aug 2007: Instrument Flight Procedures Panel (IFPP/1) Montreal, CA (OCP renamed to IFPP Apr07 . . . same panel)**
  - Must address operationally, the lack of harmonization globally
  - CDA is multi-disciplined, Concept of Ops presented
  - Two main types: Radar vectoring & prescribed track

History (continued)

- **Sep 2007: OPSP/7, Montreal, CA**
  - Strong support for concept of an idle descent
  - Term “CDA” caused problems
  - Small group formed response to WP/12
- **Mar 2008: IFPP/2, Montreal, CA**
  - Joint meeting with ATM, Chief/ENV, IFALPA, CAEP
  - Need guidelines to ATC, pilots, designers. Tasked ATM WG to develop doc for either a Manual or Circ
  - Action: “The IFPP ATM WG, in close collaboration with CAEP, will produce guidance document on CDA . . .”
- **Apr 08: ATM WG . . . Sep 08: IFPP/3: Seattle**

History (continued)

- **Nov 2008: EWG Ops SC, Georgia Tech.**
  - Manual first briefed to JPDO's EWG.
  - Solicited participation to improve manual.
- **Feb 2009: Pheonix, IFPP's ATM WG**
  - Joint mtg of ICAO, FAA, OPSP, Euro Cont, Industry
  - Terms harmonized (compromised),
  - "Continuous Descent Operations" introduced
- **Mar 2009: IFPP/4 Montreal.** 1st version of "Manual for CD Ops"
- **May 2009: IATA/ICAO meeting in Montreal**
- **July 2009: EWG, NASA Ames, Moffet Field**
- **Aug 2009: IATA/ICAO mtg, Montreal**
  - Small drafting group in prep for Sept IFPP/5

Manual Highlights: (version 4-4, 1 April 2009)

- **EXECUTIVE SUMMARY**
- **DEFINITIONS AND ABBREVIATIONS**
- **INTRODUCTION**
  - PURPOSE
  - FACILITATING CD OPERATIONS
  - CONCEPTS OF OPERATIONS
- **CONTINUOUS DESCENT OPERATIONS**
- **SPECIFIC STAKEHOLDER ISSUES**
  - PROCEDURE DESIGN
  - CHARTING ISSUES
  - FLIGHT OPERATION
  - ATC TECHNIQUES
- **Attachment A**
  - CD Implementation checklist

Manual Highlights: (version 4-4, 1 April 2009)

- **Definitions and explanation of Terms**
  - ***Continuous Descent (CD)****:* A aircraft operating technique, enabled by airspace design, procedure design and ATC facilitation, in which an arriving aircraft continuously descends by employing minimum engine thrust, ideally in a low drag configuration, prior to the Final Approach Fix (FAF)/Final Approach Point (FAP).
  - *Note: An optimum CD starts from the Top of Descent and uses descent profiles that reduce noise, fuel burn and emissions.*

Manual Highlights: (version 4-4, 1 April 2009)

- **Definitions and explanation of Terms** (continued)
  - ***Continuous descent final approach (CDFA)***: A technique, consistent with stabilized approach procedures, for flying the final approach segment of a non-precision instrument approach procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare maneuver should begin for the type of aircraft flown.

  - *Note: The CDFA technique simplifies the final segment of the non-precision approach by incorporating techniques similar to those used when flying a precision or APV approach procedure. The CDFA technique improves pilot situational awareness, and is entirely consistent with all "stabilized approach" criteria.*

  - *Optimized Profile Descent (OPD):* A form of CD operations where a descent profile is comprised of idle-power performance descent profile segments and geometric descent profile segments that maximize altitude, minimize the thrust required to remain on the path, terminates the path at the desired end location and satisfy the altitude and speed constraints along the path.

Manual Highlights: (version 4-4, 1 April 2009)

- **Para 1: INTRODUCTION**

  "The purpose of this manual is to standardize and harmonize the development and implementation of CD operations."

- **The stakeholders involved in implementing . . .**
  - Aircraft operators and pilots
  - Air Navigation Service Providers including controllers
  - Instrument Flight Procedures Designers
  - Airport Operators
- **Airspace Concept:** ICAO PBN Manual (Doc 9613)

Manual Highlights: (version 4-4, 1 April 2009)

- **Continuous Descent Operations**
  - A CD is an ATC Facilitated operating technique
  - Reduced Noise footprint
  - Path Stretching
  - Point Merge
  - 3 Options:
    - CD embedded in a STAR
    - ATC Radar Vectors
    - Hybrid: open or closed downwind leg (DTW) ATC facilitated
  - Research underway to develop tools . . .
  - Metering by adjacent centers (TMA)

Manual Highlights: (version 4-4, 1 April 2009)

Stakeholder Issues

- Procedure Design
- Charting Issues
- Flight Operations
- ATC Techniques

CD Implementation (Attachment A) 13 pages

- Not meant to be a blue print
- Collaboration

Closing Thoughts

- **The purpose of this manual is standardize and harmonize the development and implementation of continuous descent procedures**
- **As real estate, CD Ops have 3 critical elements:**
  - Collaboration, Collaboration and Collaboration
- **IATA-ICAO drafting group meets 3rd week of August**